URISA NEWS
Urban and Regional Information Systems Association

Sharing information technology solutions to urban and regional challenges since 1963.

Issue 217

January/February 2007

URISA Board's Position in MAPPS, et al. v. the United States of America

(The following statement was approved by the Board at its February 7 meeting.)

Background. The Management Association for Private Photogrammetric Surveyors (MAPPS) and three other associations filed suit in US federal court in June 2006 to compel US federal agencies to rewrite the definition of "surveying and mapping" used in federal procurement regulations for architectural and engineering services. The case was slated for a hearing on February 2 (since postponed to mid-February or later).

Specifically, the plaintiffs ask the court to order the Federal Acquisition Regulation (FAR) Council to:

…define "surveying and mapping" in such a way as to include contracts and subcontracts for services for Federal agencies for collecting, storing, retrieving, or disseminating graphical or digital data depicting natural or man made physical features, phenomena and boundaries of the earth and any information related thereto, including but not limited to surveys, maps, charts, remote sensing data and images and aerial photographic services.

Read that carefully, as if your job depended on it, because it very well might if you do contract work for the federal government. By that definition I could not take a photo of my mother on my front porch unless I erased the porch—or became a registered surveyor.

Board Opposition. In January, when a decision appeared imminent, the Board elected to join with AAG, GISCI, GITA, and UCGIS in filing a friend of court brief in opposition to the plaintiffs, and to contribute $7,500 to the effort. That brief opposes the plaintiffs' contention that they represent the entire spatial data community and that all work within that community is or should be done by surveyors and engineers. Al Butler's article in this issue provides the details of the case and the brief. The rest of this column sets forth the context and rationale for the Board's action.

What the Case Is and Is Not About. Before setting forth the Board's position on the case, it is important to clarify what the case is NOT about:
1. It is not about qualifications-based selection (QBS) procurement, the procurement method prescribed by the Brooks Act, which governs federal procurement of architectural and engineering services. No party to the case has raised any questions about QBS procedures or suggested that any other procurement method should be used.
2. It is not about licensure. The federal government does not license surveyors, engineers, or architects; states do. No party to the case questions whether or how states ought to license practitioners of any profession.

The case concerns which geospatial services must be provided under the supervision of a licensed surveyor, engineer, or architect—and which services do not require such expertise.

NCEES Model Law and Rules (ML&R). It would be most helpful, in resolving this last question, if representatives from the various professions involved could get together and argue out exactly when the expertise of surveyors and engineers is necessary and legally required, and when it is not. In fact that was done several years ago. Representatives of MAPPS, ASPRS, ASCE, NSPS, URISA, NSGIC and ACSM came to a consensus over the course of many discussions in 1999-2001. The results were compiled in the National Council of Examiners for Engineering and Surveying (NCEES) ML&R in 2003.

The ML&R provides common ground for several associations on both sides of the case. The NCEES Model Law article presented on page 12 reviews the issues that were resolved and what the ML&R mean for GIS professionals.

The ML&R are intended to provide guidance to states as they revise their survey licensure laws. One state, Oregon, relied on the ML&R in revising its state law to define clearly the surveyors' field of practice, and to delimit what GIS professionals could do outside the responsible supervision of a licensed surveyor. In their article, URISA Board members Eric Bohard and Cy Smith provide first-hand insight into how the ML&R can clarify the roles of the different geospatial professions and so increase professional respect between them.

continued on page 3

MAPPS Case - Special Issue

Response of the URISA Board of Directors. The URISA board opposes the plaintiffs' claims because of their potential to harm our professions and our industry:

1. Their claims, if accepted, would expand the scope of architectural-engineering surveying and mapping far beyond the scope of any professional expertise certified by registration or licensing as a surveyor, engineer, or architect.
2. These claims are thus in fundamental conflict with the norms of professional practice across the geospatial professions.
3. The claims contradict the NCEES Model Laws and Rules, which URISA (and MAPPS, among others) have endorsed for several years.
4. The claims, if accepted by the federal courts, would not affect state licensing directly, but they would set an important precedent that would likely influence the development of state licensing and registration laws.
5. Acceptance of these claims would cause significant harm, in a variety of ways, to the majority of geospatial professionals—those who are not licensed surveyors, engineers, or architects.
6. Acceptance of these claims would place under the responsible supervision of licensed surveyors, engineers, or architects crucial federal geospatial services requiring expertise in geography, remote sensing, information science and technology, and numerous other specialties, all well outside the licensed professional competence of surveyors, engineers, or architects.
7. Placing these federal services under the control of persons lacking the professional expertise to oversee them would cause inefficiency and waste of public funds, and would risk significant harm to the public health, safety, and welfare.
8. Encouraging licensed professionals to claim competence in areas outside their professional expertise violates a fundamental tenet of professional ethics.
9. By seeking to expand via court order the scope of the surveying, engineering, and architecture professions, the plaintiffs are attempting to achieve by regulation what cannot be sustained through competition in a free market economy. Such regulation could only stifle innovation and growth in a high-growth industry that is crucial to research, defense, and economic development.

The Board's opposition is rooted in URISA's core values as well as our professional interests. URISA is a multidisciplinary association where professionals from all parts of the spatial data community can come together and share concerns and ideas. Such a community requires respect for the specialized expertise of the various professions that have contributed to our industry and to URISA. The plaintiffs' claims would undermine those values by subordinating all geospatial professions to surveying and engineering, thereby disenfranchising the majority of URISA's members and threatening the quality of spatial data available to the public.

Our opposition does not reflect in any way on the professions themselves, but simply on the plaintiffs' claims in this court case. Likewise, while we disagree in court on this case, URISA and MAPPS will continue to find many issues where we agree and work together. And on this issue we will remain open to further discussion with the plaintiffs in alternate forums.

Creating a URISA Policy Committee. This case may be decided as early as mid-February, but the underlying issues are long-term issues. Several other policy issues have also arisen in the past few years. Our website now has a "Policy Watch" page where Board statements and background materials are posted.

All of this underscores URISA's need for a means by which the entire URISA membership can be involved in raising issues and articulating URISA's stand on them. At the Vancouver conference, URISA's past presidents (led by Pete Croswell and Will Craig) recommended that URISA create a Policy Advocacy Committee enhance and formalize URISA's role as a policy advocate. As Pete wrote, "The overall idea is to increase our level of activity in submitting comments, drafting formal resolutions, and lending our voice to policy initiatives of national, international, or regional scope that have relevance for our membership and our mission." The Board expects to act on their recommendation in the next few months.

Meanwhile, we'd like to know your opinion on this case—please email us at: urisaboard@urisa.org

Association Viewpoints

UCGIS statement
http://www.ucgis.org/docs/UCGIS_position_MAPPS_lawsuitFinal.htm

GISCI statement
http://www.gisci.org/Issues_News_Policy/MAPPSvUS_Suit.htm

AAG statement
http://www.aag.org/Donate/links.html

NSGIC statement
http://www.directionsmag.com/article.php?article_id=2388

MAPPS statement
http://www.mapps.org/QBSlawsuit.asp

The GIS & Surveying Dilemma: A Model Solution in Oregon

By Cy Smith, GISP, Statewide GIS Coordinator, State of Oregon and
Eric Bohard, GISP, Clackamas County, OR

In early 2001, the Professional Land Surveyors of Oregon (PLSO) presented legislation to "clarify" survey law. The proposed legislation would have placed the practice of GIS under the authority of a licensed surveyor. In Legislative committee, it became apparent that surveyors and GIS professionals had lots to work out before any legislation could be agreed upon. A grass roots task force was created in the late summer of 2001 to try to resolve the issues.

The task force included representatives from Oregon professional organizations including: the PLSO, the Oregon Association of County Engineers and Surveyors (OACES), the Oregon Geographic Information Council (OGIC), the Oregon Geographic Information Systems Association (OGISA), and Oregon chapters of the American Society for Photogrammetry and Remote Sensing (ASPRS) and the Urban and Regional Information Systems Association (URISA).

The task force spent a lot of time getting all the issues on the table. They worked on definitions for the various professions involved in the matter. They reviewed many examples and looked for common solutions. They met monthly or bi-monthly for more than three years. The primary focus of the task force was on process, not on technology, and the stated intent of their activities was to ensure protection of the public.

The following primary issues were identified by the task force.

1. Data: Geographic information has become far more accessible than in the past.
   Professionals, decisions makers, and the public are using data from a wide variety of sources in ways that were not intended or appropriate, putting us all at risk.
2. Tools: New tools are providing professionals, decisions makers, and the public with the means to collect, use, and integrate geographic information in ways that may be inappropriate.
3. Definitions: There are not clear definitions as to what the various professions do, and how they relate to each other.
4. Education/Communication: Professionals have not identified what the real problems and concerns are, so rumors abound. Professionals also do not know what the various statutes, AG opinions, and administrative rules are that impact the various professions.
5. Disparate Activities: Professional organizations do not have a good mechanism (process) for review of actions that affect other professional organizations.
6. Focus: Nobody really understands how big the problems are so it is hard to focus on any specific issue.
7. Responsibility: When the public is put at risk due to problems with collection, analysis, and dissemination of geographic information, there is no way to address and resolve the problem.

The task force agreed on three key results:

- GIS data and products should always be accompanied by a clear disclaimer.
- GIS professionals should at a minimum be certified.
- State law should be changed to reflect NCEES Model Law recommendations.

The Oregon Geographic Information Council, authorized by Governor's Executive Order 00-02, took responsibility for the first two items. In 2002, as soon as the task force agreed that a disclaimer was necessary, OGIC developed and adopted standard disclaimer language and a policy that this language is to accompany all GIS data and products. That disclaimer and policy are posted at: http://gis.oregon.gov/DAS/EISPD/GEO/ogic/OGIC_Disclaimer_Policy.pdf

In June 2002, OGIC developed and adopted a GIS professional certification plan and, in 2003, became one of the first two states to endorse what evolved in to the GIS Certification Institute professional certification process. The Oregon plan says that, "Senior professionals who are responsible for managing GIS programs or supervising the production of products (digital or paper) for the public or other organizations should be certified." The OGIC certification plan is posted at:http://gis.oregon.gov/DAS/EISPD/GEO/ogic/docs/CertificationPlan.pdf

On the third point of agreement, we made the following requests in January 2004 of the Oregon State Board of Examiners for Engineering and Land Surveying (OSBEELS):

1. Work with the task force to review and adopt the inclusions/exclusions contained in the new NCEES model law, as administrative rules;
2. Work with task force organizations to update current survey statutes to reflect the new NCEES model laws during the next legislative session; and
3. Work with the task force to ensure that the concerns of the participants are addressed, such as incorporating the NCEES Savings Clause language along with a provision to leave the grandfather period open until such time as an appropriate exam

for photogrammetric surveyors and mappers is in place.

During the ensuing process to develop and propose draft legislation, OSBEELS and the task force agreed to include the inclusions/exclusions for GIS (the Model Rules) in to the new statutory language, rather than writing them in to the Oregon Administrative Rules. The new statute that defines the practice of land surveying in Oregon, adopted in the 2005 legislative session, can be found at: http://www.leg.state.or.us/ors/672.html. The inclusions/exclusions are specifically called out in ORS 672.060.

Following the passage of the new legislation, OSBEELS developed a checklist to assist everyone in determining whether they are practicing land surveying or GIS with any particular activity. You can find that checklist in the box below.

The process we followed in establishing and working with a grass roots task force that included all the affected organizations was invaluable in resolving the issues. It took us almost three and half years by the time we got legislation passed in the 2005 legislative session, so perseverance and persistence were key characteristics of the effort. There were lots of opportunities for things to move in the wrong direction as we proceeded and we had to stay on top of things, communicating regularly to make sure we headed off any misunderstandings. We've developed trust and partnerships that are now paying dividends as we work together on other issues, such as data sharing between government organizations at all levels.

OSBEELS Surveying or GIS Checklist

1. Does it provide or offer to provide professional services that apply mathematics, geodesy and other sciences and involve the making of geometric measurements and gathering of related information pertaining to the physical or legal features of the earth?
2. Does it provide or offer to provide professional services that apply mathematics, geodesy and other sciences and involve the making of geometric measurements and gathering of related information pertaining to improvements on the earth?
3. Does it provide or offer to provide professional services that apply mathematics, geodesy and other sciences and involve the making of geometric measurements and gathering of related information pertaining to the space above or below the earth?
4. Does it provide or offer to provide professional services that apply mathematics, geodesy and other sciences and involve the development of measurements and information described in questions 1 through 3 above into graphics, data, maps, plans, reports, descriptions, projects or other survey products?
5. Is it a geodetic survey?
6. Does it establish, reestablish or replace boundaries or geodetic control monuments or reference points?
7. Does it locate, relocate, establish, reestablish or retrace any property lines or boundaries for any tract of land, road right of way or easement?
8. Was it a survey for the division or subdivision of a tract of land or the consolidation of tracts of land?
9. Did it involve locating and laying out alignments, positions or elevations for the construction of fixed works?
10. Did it involve performing or offering to perform any investigation, interpretation or evaluation of, or any consultation or testimony about any of the services described above?
11. Did it involve the collection, preparation, manipulation or modification of data related to any of the services described above, other than acting as a scrivener?
12. Did it fall within the new definition of photogrammetric mapping?
13. Did it result in surveys involving horizontal or vertical mapping control or geodetic control?

If the answer to one or more of the above questions was yes, then the act or acts performed may fall within the new definition of the practice of land surveying. However, new exemptions were added to ORS 672.060, and if the act or acts fall within any of these exemptions, the act would likely be exempt from being regulated as the practice of land surveying.

1. Did the person maintain or transcribe existing georeferenced data into a GIS or LIS format by manual or electronic means and the data are clearly not intended to indicate the authoritative location of property boundaries, the precise shape or contour of the earth or the precise location of fixed works of humans?
2. Did the person perform activities under ORS 306.125 or 308.245 involving transcribing tax maps, zoning maps or other public data records into GIS or LIS formatted cadastre and maintain those cadastre where the data are not modified for other than geographical purposes and the data are clearly not intended to authoritatively represent property boundaries?
3. Did the person prepare maps or compile databases depicting the distribution of natural or cultural resources, features or phenomena and the maps or data are not intended to indicate the authoritative location of property boundaries, or the precise shape or contour of the earth, or the precise location of fixed works by humans?
4. Was the act performed by a federal agency or its contractors in the preparation of military maps, quadrangle topographic maps satellite imagery or other maps that do not define real property?
5. Was the act performed by a federal agency or its contractors in the preparation of documents or databases into a GIs or LIS format, including but not limited to the preparation or transcription of federal census and other demographic data?
6. Was the act performed by a law enforcement agency or its contractor in the preparation of documents or maps for traffic accidents, crime scenes or similar purposes depicting physical features or events or generating or using georeferenced data involving crime statistics or criminal activities?
7. Was the act performed by a peace officer as defined in ORS 161 .015 or fire service professional as defined in ORS 181.610 in conducting, reporting on or testifying about or otherwise performing duties regarding an official investigation?
8. Did the act result in the creation of general maps prepared for private or governmental agencies: (1) for use as guides to motorists, boaters, aviators or pedestrians; (2) for publication in a gazetteer or an atlas as an educational tool or reference publication; (3) for use in the curriculum of any course of study; (4) for use as an illustrative guide to the geographic location of any event (if produced by electronic or print media); or (5) for use as advertising material or user guides (if prepared for conversational or illustrative purposes)?

If the answer to one or more of the above questions is yes, then the act or acts performed may fall within an exemption from regulation of the practice of land surveying. These exemptions were added to ORS 672.060.

NCEES Model Law: What it Means to GIS Professionals

The 'Model Law' published by the National Council of Examiners for Engineering and Surveying (NCEES) provides state engineering and surveying licensure boards national guidance in developing individual state practice laws. In 1995, the surveying portion of the Model Law was revised to include specific reference to the use of 'land information systems and geographic information systems'. Once aware of the change, GIS professionals raised concerns as to the potential impact of the Model Law on the practice of GIS.

The NCEES responded to the concerns by adding representatives from URISA and the National States GIS Council (NSGIC) to a 'Multi-organizational Task Force' (MOTF) already comprised of representatives from several engineering, surveying and photogrammetry professional associations. The mission of the MOTF was to discuss the application and misapplication of GIS and to develop a set of recommendations to clarify the language of the Model Law and clearly identify those mapping activities that required the services of a licensed surveyor.

The MOTF convened regularly by telecon over a period of 13 months. The dialog was typically frank, occasionally contentious, but always constructive. There was early agreement that surveyors 'determine' location and GIS professionals 'reference' location. Revising the language of the Model Law to reflect this agreement was tedious. The 1995 preamble paragraph was especially broad in scope:

> The term "Practice of Surveying or Land Surveying," within the intent of this Act shall mean providing professional services such as consultation, investigation, testimony evaluation, expert technical testimony, planning, mapping, assembling, and interpreting reliable scientific measurements and information relative to the location, size, shape, or physical features of the earth, improvements on the earth, the space above the earth, or any part of the earth, and utilization and development of these facts and interpretation into an orderly survey map, plan, report, description, or project…

By reviewing the paragraph, as a group, word by word, the MOTF was able to identify some small, but critical changes that resulted in a more narrow definition *(emphasis added to illustrate key changes)*

> The term "Practice of Surveying or Land Surveying" within the intent of this Act shall mean providing, or offering to provide, professional services involving **both** (1) the making of geometric measurements of, and gathering related information pertaining to, the physical or legal features of: the earth, improvements on the earth, the space above the earth, or any part of the earth; **and** (2) utilization and/or development of these facts into **survey products** such as graphics, digital data, maps, plans, reports, descriptions, and/or projects…

A second key issue for the GIS professionals was the 1995 explicit reference to the use of GIS/LIS technology in item (h) below:

> The practice of surveying or land surveying includes, but is not limited to, any one or more of the following:
> **(a)** Determining the configuration or contour of the earth's surface or the position of fixed objects thereon by measuring lines and angles and applying the principles of mathematics or photogrammetry.
> **(b)** Performing geodetic surveying which includes surveying for determination of the size and shape of the earth utilizing angular and linear measurements through spatially oriented spherical geometry.
> **(c)** Determining, by the use of principles of surveying, the position for any survey control (non-boundary) monument or reference point; or setting, resetting, or replacing any such monument or reference point.
> **(d)** Creating, preparing, or modifying electronic or computerized data, including land information systems, and geographic information systems, relative to the performance of the activities in the above described items (a) through (c).
> **(e)** Locating, relocating, establishing, reestablishing, laying out, or retracing any property line or boundary of any tract of land or any road, right of way, easement, alignment, or elevation of any of the fixed works embraced within the practice of engineering.
> **(f)** Making any survey for the subdivision of any tract of land.
> **(g)** Determining, by the use of principles of land surveying, the position for any survey monument or reference point; or setting, resetting, or replacing any such monument or reference point.
> **(h)** Creating, preparing, or modifying electronic or computerized data, including land information systems, and geographic information systems, relative to the performance of the activities in

the above described items (e) through (g).

It was unclear why GIS/LIS was singled out and no reference made to the use of other mapping technologies. Given that a range of mapping professionals utilize GIS, the explicit reference served to muddy, rather than clarify, the professional roles. The GIS professionals pushed for the removal of any reference to tools and technologies and provided recommendations to focus the language on the mapping activities that define the practice of surveying. The surveying professionals cited specific concerns as to the use of GIS by non-surveyors when making permitting and other regulatory decisions related to land records. The following compromise language was developed:

(h) Creating, preparing, or modifying electronic or computerized data relative to the performance of the activities in the above described items (e) through (g).

The most significant work, however, achieved by the MOTF was the development of a set of 'Model Rules' intended to accompany the Model Law. Based upon a set of 'Inclusions and Exclusions' developed cooperatively by the Surveying and GIS professionals within the State of North Carolina, the Model Rules set forth specific mapping activities considered 'included within the surveying practice' and 'excluded from surveying practice' and are intended to serve as guidelines for the both the mapping community at large and the regulatory boards. The Model Rules emphasize that 'a distinction must be made in the use of electronic systems between making or documenting original measurements in the creation of survey products, versus the copying, interpretation, or representation of those measurements in such systems. Further, a distinction must be made according to the intent, use, or purpose of measurement products in electronic systems to determine a definitive location versus the use of those products as a locational reference for planning, infrastructure management, and general information'.

The NCEES was highly receptive to the work of the MOTF and implemented most of the group's recommendations in the 2003 revision to the Model Law. The success of the effort is due in great part to willingness of the survey community to include the GIS community in the dialog and explore issues of mutual concern. It was unfortunate that the dialog occurred after the inclusion of GIS/LIS within the Model Law; discussion before the fact is far more productive than dialog after the fact and provides greater opportunities for shared learning and fewer feelings of mistrust.

The Model Law remains just that, a model. Each state implements the law as it sees fit. Some adopt the text verbatim, some adopt modifications, and some adopt practice laws that are completely independent. As such, it is difficult to determine how many states have adopted the 2003 revisions to the Model Law and, perhaps more importantly, how many states have adopted the Model Rules. Current estimates are extremely low. What is clear, however, is that in states with Survey practice laws that include specific reference to GIS; 1) the GIS community is challenged in its ability to effectively coordinate and, 2) the state typically lack both a statewide GIS Coordinator and formal representation in national GIS efforts and organizations such as NSGIC.

It is in the interest of all GIS professionals to review the Surveying practice law of their state and determine their own professional liability. More importantly, all geospatial professionals should follow the example of the MOTF and actively engage in efforts to craft state licensure laws that sincerely protect the public interest with regard to not only safety but the ability to secure the most qualified individual to provide the services needed.

Bottomline… there is plenty of work for us all. The US Department of Labor identified the geospatial industry as a 'high growth, high demand, and economically vital sector of the American economy' and is funding a GITA/AAG joint effort to support geospatial workforce development. Our time and energy should be spent working to define the industry and elucidate the skills each profession brings to the table. Each of us should identify those in allied geospatial professions that we can depend upon to support our work and form partnerships to meet the geospatial information needs of the public. The MOTF represented a strong start toward an industry-wide dialog and the NCEES Model Rules remain a testament to the success of that effort. Unfortunately, too much energy has been misdirected toward litigation and lobbying efforts and valuable ground has been lost.

For more information:

NCEES Model Law: http://www.ncees.org/introduction/about_ncees/ncees_model_law.pdf

NCEES Model Rules: http://www.ncees.org/introduction/about_ncees/ncees_model_rules.pdf

GIS/LIS MOTF Report: http://www.asprs.org/news.ncees/GIS_LIS_report_final.doc

DOL Geospatial Workforce Development: http://www.doleta.gov/BRG/Indprof/Geospatial.cfm

MODEL RULES

SEPTEMBER 2006

NATIONAL COUNCIL OF EXAMINERS FOR ENGINEERING AND SURVEYING®

CONTENTS

210 INTRODUCTION

210.10 Introduction

A. Purpose

The purpose of adopting rules of procedure is to ensure the protection of the public by ensuring the proper performance of the duties of the board of licensure by the regulation of member and personnel procedures, meetings, records, examinations, and the conduct thereof.

B. Requirements for Adoption

The adopted rules of procedure may not be inconsistent with the constitution and laws of this jurisdiction. They must be approved by appropriate legislative authority of the jurisdiction.
(Section 120.60 A, Board Powers, NCEES Model Law*)*

C. Authority of Rules

Rules of procedure adopted by the board shall be binding upon persons licensed under the Act and shall be applicable to corporations holding a certificate of authorization.
(Section 120.60 A, Board Powers, NCEES Model Law*)*

210.20 Definitions

A. The NCEES *Model Law*, Section 110.20, Definitions, provides definitions of the following terms:

1. Engineering
    a. Engineer
    b. Professional engineer
    c. Professional engineer, retired
    d. Engineer intern
    e. Practice of engineering
    f. Inactive licensee
2. Surveying
    a. Professional surveyor
    b. Professional surveyor, retired
    c. Surveyor intern
    d. Practice of surveying
    e. Inactive licensee
3. Other
    a. Board
    b. Jurisdiction
    c. Responsible charge
    d. Rules of Professional Conduct
    e. Firm
    f. Managing agent
    g. Rules
    h. Signature
    i. Seal

B. The following definitions are included in *Model Rules* only:

1. Model Law Engineer – The term "Model Law Engineer" refers to a person who:
    a. Is a graduate of an engineering program accredited by the Engineering Accreditation Commission of ABET, Inc. (EAC/ABET)
    b. Passes the 8-hour NCEES Fundamentals of Engineering (FE) exam and an 8-hour NCEES Principles and Practice of Engineering (PE) exam using the NCEES cut score *(Section 110.20, Definitions, NCEES* Model Law*)*
    c. Completes 4 years of acceptable engineering experience after confirmation of a bachelor of science degree in an engineering program, which may include up to 1 year of experience for a graduate engineering degree
    d. Has a record clear of disciplinary action

2. Model Law Surveyor – The term "Model Law Surveyor" refers to a person who:
   a. Is a graduate of an EAC/ABET-accredited Surveying Engineering Group program, a Surveying and Mapping Group program accredited by the Applied Science Accreditation Commission of ABET (ASAC/ABET)
   b. Passes the 8-hour NCEES Fundamentals of Surveying (FS) exam and a 6-hour NCEES Principles and Practice of Surveying (PS) exam using the NCEES cut score
   c. Completes 4 years of acceptable surveying experience after confirmation of a bachelor of science degree in a surveying/geomatics program, which may include up to 1 year of experience for a graduate surveying/geomatics degree
   d. Has a record clear of disciplinary action

   The jurisdiction may require a Model Law Surveyor to pass its state-specific exam for surveyors.
3. Model Law Structural Engineer – The term "Model Law Structural Engineer" refers to a licensed engineer who:
   a. Is a graduate of an engineering program accredited by the Engineering Accreditation Commission of ABET, Inc. (EAC/ABET)
   b. Passes a minimum of 18 semester (27 quarter) hours of structural analysis and design courses. At least 9 of the semester (14 quarter) hours must be structural design courses.
   c. Passes the 8-hour NCEES Fundamentals of Engineering (FE) examination.
   d. Passes 16 hours of structural examinations consisting of one of the following:
      (1) NCEES structural examinations, 8 hours of which are SE II
      (2) 16-hour state-written structural examinations taken prior to 2004
      (3) NCEES SE II plus 8-hour state-written examinations
   e. Completes 4 years of acceptable structural engineering experience after confirmation of a bachelor's degree. A maximum of 1 year of credit may be given for graduate engineering degrees that include at least 6 semester (9 quarter) hours of structural engineering (in addition to the 18 hours noted above).
   f. Has a record clear of disciplinary action.

210.25 Inclusions and Exclusions of Surveying Practice

A. Activities Included within Surveying Practice

Activities that must be accomplished under the responsible charge of a professional surveyor (unless specifically exempted in Section B on the next page) include, but are not limited to, the following:

1. The creation of maps and georeferenced databases representing authoritative locations for boundaries, the location of fixed works, or topography. This includes maps and georeferenced databases prepared by any person, firm, or government agency where that data is provided to the public as a survey product.
2. Original data acquisition, or the resolution of conflicts between multiple data sources, when used for the authoritative location of features within the following data themes:

geodetic control, orthoimagery, elevation and hydrographic, fixed works, private and public boundaries, and cadastral information.

3. Certification of positional accuracy of maps or measured survey data.
4. Adjustment or authoritative interpretation of raw survey data.
5. Geographic Information System (GIS) - based parcel or cadastral mapping used for authoritative boundary definition purposes wherein land title or development rights for individual parcels are, or may be, affected.
6. Authoritative interpretation of maps, deeds, or other land title documents to resolve conflicting data elements.
7. Acquisition of field data required to authoritatively position fixed works or cadastral data relative to geodetic control.
8. Analysis, adjustment or transformation of cadastral data of the of the parcel layer(s) with respect to the geodetic control layer within a GIS resulting in the affirmation of positional accuracy.

B. Activities Excluded from Surveying Practice

A distinction must be made in the use of electronic systems between making or documenting original measurements in the creation of survey products, versus the copying, interpretation, or representation of those measurements in such systems. Further, a distinction must be made according to the intent, use, or purpose of measurement products in electronic systems to determine a definitive location versus the use of those products as a locational reference for planning, infrastructure management, and general information. The following items are not to be included as activities within the definition of surveying:

1. The creation of general maps:
   a. Prepared by private firms or government agencies for use as guides to motorists, boaters, aviators or pedestrians;
   b. Prepared for publication in a gazetteer or atlas as an educational tool or reference publication;
   c. Prepared for or by education institutions for use in the curriculum of any course of study;
   d. Produced by any electronic or print media firm as an illustrative guide to the geographic location of any event;
   e. Prepared by laypersons for conversational or illustrative purposes. This includes advertising material and users guides.
2. The transcription of previously georeferenced data into a GIS or LIS by manual or electronic means, and the maintenance thereof, provided the data are clearly not intended to indicate the authoritative location of property boundaries, the precise definition of the shape or contour of the earth, and/or the precise location of fixed works of humans.
3. The transcription of public record data, without modification except for graphical purposes, into a GIS- or LIS-based cadastre (tax maps and associated records) by manual or electronic means, and the maintenance of that cadastre, provided the data are clearly not intended to authoritatively represent property boundaries. This includes tax maps and zoning maps.
4. The preparation of any document by any federal government agency that does not define real property boundaries. This includes civilian and military versions of quadrangle topographic maps, military

maps, satellite imagery, and other such documents.

5. The incorporation or use of documents or databases prepared by any federal agency into a GIS/LIS, including but not limited to federal census and demographic data, quadrangle topographic maps, and military maps.
6. Inventory maps and databases created by any organization, in either hard-copy or electronic form, of physical features, facilities, or infrastructure that are wholly contained within properties to which they have rights or for which they have management responsibility. The distribution of these maps and/or databases outside the organization must contain appropriate metadata describing, at a minimum, the accuracy, method of compilation, data source(s) and date(s), and disclaimers of use clearly indicating that the data are not intended to be used as a survey product.
7. Maps and databases depicting the distribution of natural resources or phenomena prepared by foresters, geologists, soil scientists, geophysicists, biologists, archeologists, historians, or other persons qualified to document such data.
8. Maps and georeferenced databases depicting physical features and events prepared by any government agency where the access to that data is restricted by statute. This includes georeferenced data generated by law enforcement agencies involving crime statistics and criminal activities.

220 THE LICENSING BOARD

220.10 Organization of the Board

A. Composition and Selection of the Board

The board consists of ..... professional engineers, ... professional surveyors, and ..... public members, who are appointed by the governor. They are appointed on a staggered basis so that the terms of members expire at different times. The term of each member is ..... years. Each member holds office until the expiration of the term or until a successor has been appointed and has qualified. If a vacancy on the board occurs for any reason and the governor fails to appoint a successor within 3 months, the board has the power to fill the vacancy until the governor makes an appointment.
(Section 120.10, Board Appointments, Terms, NCEES Model Law*)*

B. Qualifications of Members

1. Each engineering member of the board shall be a citizen, and a resident of this jurisdiction, and licensed as a professional engineer in this jurisdiction. The member must have a record of the lawful practice of engineering as a professional engineer for at least 12 years of which 5 years must have been in responsible charge of engineering projects.
2. Each professional surveyor member of the board shall be a citizen, and a resident of this jurisdiction, and licensed as a professional surveyor in this jurisdiction. The member must have a record of the lawful practice of surveying as a professional surveyor for at least 12 years of which 5 must have been in responsible charge of surveying projects.
3. The public members must not be or have been engineers or surveyors and shall be a citizen and resident of this jurisdiction.
(Section 120.20, Board Qualifications, NCEES Model Law*)*